

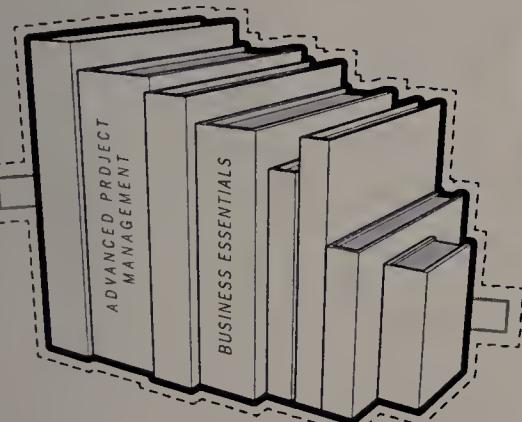
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OCTOBER 8, 2012

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HP Converged Infrastructure and the Cloud

The essential foundation for any cloud deployment

Duncan Campbell, vice president of worldwide marketing for converged infrastructure at HP Enterprise Group, shares with Computerworld his insights on the HP Converged Infrastructure.

IT increasingly views the cloud as a strategic business enabler. How is HP helping IT departments reach their cloud goals more safely, quickly, and easily?

To truly deliver on the “services anywhere” promise, organizations must think differently about IT. Successful organizations create the right mix of on- and off-premise services by leveraging the best of traditional IT, private, managed, and public cloud for a seamless infrastructure experience.

Recognizing that one size does not fit all when it comes to cloud adoption is crucial. To make the process easier, faster, and safer, we must acknowledge that different customers require different on-ramps and delivery models.

HP fully understands this. That's why earlier this year we introduced the HP Converged Cloud approach and portfolio, which delivers solutions based on a single common architecture and open-standards approach. It gives customers choice, consistency, and confidence across infrastructure, applications, and information.

What is the relationship between the Converged Infrastructure and the Cloud?

The HP Converged Infrastructure helps IT enable business success by accelerating the time-to-value of applications and services. This can only be achieved with an infrastructure or data center that is simpler, more flexible, more efficient, and less ex-

pensive to operate. The infrastructure also needs to be cloud-ready.

That's exactly what the HP Converged Infrastructure delivers. Organizations can build, secure, and manage their cloud environments, and utilize off-premise cloud services or access services when needed. This type of broad portfolio of integrated software and hardware solutions and services lets our customers fast-track to the cloud—in as little as one month—or take a step-by-step approach, expanding into the cloud when their processes, organizations, and governance are ready. The HP Converged Infrastructure, powered by Intel, is the essential foundation for IT today and into the future.

Why is a Converged Infrastructure critical for IT and the business?

Organizations need the best infrastructure possible to compete and grow in today's fast-paced, mobile business world. But aging infrastructures and facilities are limiting business agility and draining IT budgets.

Most customers tell me the same story: Their IT infrastructure is too complex, too costly to operate, and too slow to respond to business needs. What I hear is supported by research findings. Organizations now spend upwards of 70 percent of their IT resources on operations and activities that keep the lights on, as it were, when what they should be spending it on is innovation.

What differentiates the HP Converged Infrastructure and cloud approach?

There are three huge differentiators.

First, HP solutions are designed upfront with convergence in mind. Our R&D



Duncan Campbell
VP OF MARKETING, HP CONVERGED INFRASTRUCTURE
HEWLETT-PACKARD COMPANY

Duncan Campbell is the leader of the Enterprise Group Solutions Marketing team. In this role, Campbell is responsible for the Marketing Strategy and the Solutions content development for: HP Converged Infrastructure, Application Transformation, Information Optimization, Security and Risk Management, Mobility and SMB. Campbell brings more than 25 years of enterprise and midmarket marketing experience to this leadership team.

teams develop products and integrated solutions across all key areas of IT infrastructure—servers, storage, networking, data center design, and IT management.

Second, our solutions are open, not closed. Our modular building-block approach enables flexibility and portability across deployment models, which is critical for cloud solutions that must extend across infrastructure, applications, and information. We listen and don't dictate to our customers choices on operating systems and hypervisors. We've built our HP Converged Infrastructure and Converged Cloud architecture with our partners in mind, which enables us to leverage an already second-to-none partner ecosystem, and train and deliver the broadest set of solutions in the industry.

Third, as a trusted technology advisor, HP brings decades of proven, reliable experience helping customers meet their most demanding data center challenges. It's our vision and execution that gives customers around the world the confidence that HP is the right partner for success.

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*Substantiation: IDC white paper sponsored by HP, *Measuring the Business Value of Converged Infrastructure in the Data Center*, October 2011

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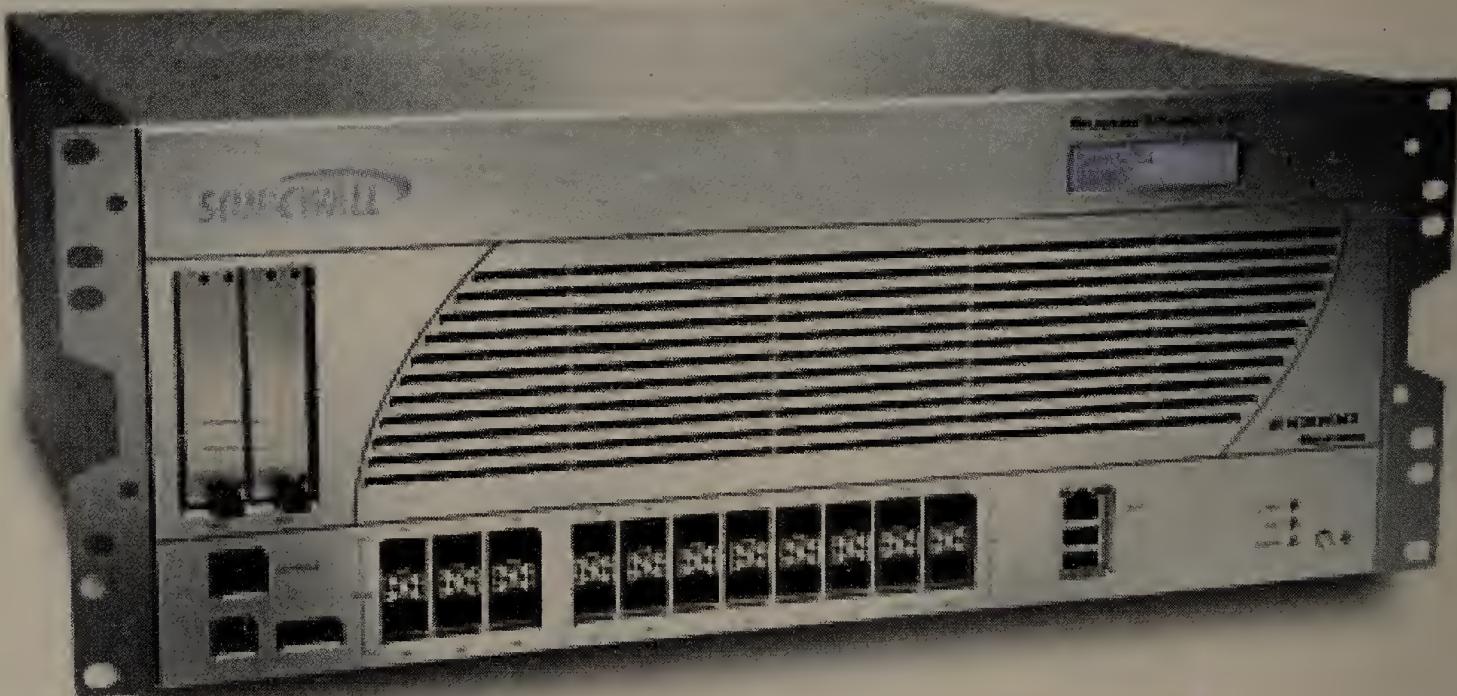
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Security question #17

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OCTOBER 8, 2012

FROM THE EDITOR | JOHN DIX

Cautious IT optimism, but behind in BYOD

Slow and steady" seems to be the watchword, with the bulk of IT shops responding to our latest "State of the Network" study saying their budgets and headcount will remain flat in the coming year.

If you're a glass-half-empty type, that is bad news given the ever-increasing demands on IT, but if you're an optimist this might not sound too bad given the wobbly economy and the fact that many new technologies promise increased efficiencies.

On the budget front, nearly half of the group surveyed (47%) said they expect their funds will remain flat over the next 12 months, while 20% expect to get budget hikes, and significant ones at that: an average of 20%. Of the remaining, 14% think they'll see budget cuts and one-fifth said they aren't sure.

The numbers are similar for IT headcount expectations, with half saying employee levels will remain the same, a quarter expecting to add bodies, 11% saying they are likely to lose personnel and 14% unsure of what will happen.

Asked what percentage of their IT budget is allocated to on-premise IT facilities vs. various hosted options, as a group the mean summary was: 75% on premise, 10% collocation (your equipment in someone else's building), 7% IaaS (the supplier owns the building and the equipment, but not the app), and 8% SaaS (the supplier owns the building, the equipment and the app).

Asked to anticipate how that mix will change 18 months from now, the numbers show a migration to the cloud: 69% on premise; 11% collocation; 10% IaaS; 10% SaaS. Said another way, that's an 8% slide on the traditional side and 25% gains for IaaS and SaaS.

While the study showed interest in and plans for a wide range of tech initiatives, it also revealed that companies are behind the eight ball when it comes to bringing your-own-device efforts.

Only 16% of the participants have BYOD policies in place, which is a basic building block for BYOD, and it is a fair bet that a far greater percentage of companies have employees accessing resources from personal devices, meaning these organizations have broad risk exposure.

Of course most companies wouldn't know that employees were using mobile devices to log in because only 13% have deployed mobile device management or mobile application management tools. What's more, a whopping 42% say MDM/MAM isn't even on their radar.

On a related note, only 20% of the respondents say they have formally added support for tablets, and only 8% have built corporate app stores. While it is tempting to cite the data as evidence that the BYOD hype is outpacing reality, the plethora of smartphones and tablets in meetings would suggest otherwise.



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peersay

NETWORK WORLD

Negative press helps OpenStack

→ THOUGH THERE ARE some merits (how the community is going to make sure that the core engine remains pure and that some vendors don't exploit extensions framework) to Lydia's criticism, she went way overboard and *Network World* also ignited the topic by giving the article a controversial headline (Re: "Gartner report throws cold water on uber-hyped OpenStack project"; tinyurl.com/8rlt3o).

Lydia contradicts herself with her arguments; for-profit companies writing drivers for their gear/software to work with OpenStack is the power of OpenStack. Wide adaptability, not only by customers but also by technology vendors, will be a true triumph for customers and industry as a whole. Can you imagine if Linux could not run on x86 or it was only supported with one vendor's hardware?

In a way reports like Gartner's will do more good than harm to OpenStack by keeping the community aware of wrongdoers and by challenging the community to keep the core parts of OpenStack pure!

Sarbjobal

Apple's real hits and misses

→ IT IS AN interesting perspective you have concerning Apple missing when it comes to "ditching Google Maps" (Re: "Three quick hits, misses for the iPhone 5"; tinyurl.com/9bcgndh).

Many others in the industry are reporting the real reason was Google's insistence on additional tracking software that reached beyond Apple's data-privacy policies. Sometime a walled garden is a good thing.

James Pasquale

→ THE MOST TROUBLING problem with Apple is not that there is Android competition. There will be eventually. The problem is there is only one outstanding Android competitor — Samsung. If HTC or Motorola can do better, the Android ecology will become badly fragmented, become a real mess, and there will be no way to compete with Apple.

dpgj

Can you imagine if Linux could not run on x86 or it was only supported with one vendor's hardware?

may be a bit rusty, but I believe your headline is misleading. Ellison's current views on cloud computing seem to be, as you point out, 180 degrees away from his original views (Re: "Once a basher, now a believer, Oracle chief Larry Ellison has come full circle on cloud computing"; tinyurl.com/9mkzgtj).

To come full circle, he would have to revert to his original disdain for cloud computing. I don't see that happening while there's money on the table.

Doyle Hunter

Penalty flag on use of hyperbole

→ "THE ENTIRE INTERNET is up in arms ..." That's a very large call and redefines hyperbole. I would suggest that even in the U.S., a majority don't care one bit about a problem with officials in the NFL. Of those who do, I wonder how many dived for their computers to vent (Re: "Replacement Google' mocks NFL's replacement refs"; tinyurl.com/9n2c84b)?

I'd suggest that rather than the entire Internet, it's closer to <1%.

David Martin

Fear data mining, not advertising

→ HERE'S A THOUGHT: Why not try to find a new business model that doesn't rely so heavily on advertising? I hate to break this to you guys, but it's only a matter of time before ads are simply no longer capable of supporting the largest services online. Ads are a dead-end business, and the ITIF already knows it (Re: "Think tank's website rejects browser do-not-track requests"; tinyurl.com/99lb577).

What isn't a dead end is data-mining your user base. It's true that tracking is a core source of revenue, but it's not always going to be for showing targeted ads. It's so they can sell you to insurance companies, credit banks and law enforcement.

And that's only the beginning. Ads and ad-blockers are just the delivery mechanism for the tracking software. Eventually the ad revenue will dry up, but the tracking will remain, unless we say no.

Matt Popke

360° ≠ 180°

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HP makes SDN splash

IN A SHOT at rivals Cisco and Juniper, HP last week unveiled a software-defined networking portfolio that spans infrastructure, control plane operations and applications. The product blitz includes HP's own SDN controller, a separate control plane appliance, and software for dictating flows in an OpenFlow-based SDN. HP, which rolled out 16 OpenFlow-enabled switches earlier this year, also just enabled nine more OpenFlow switches by adding the open source SDN protocol to its existing 3800 line. HP claims that no other vendor, including Cisco, offers as complete an SDN portfolio as it does, with a controller, 25 OpenFlow-enabled switches, and applications. HP also has beta customers for its SDN package, including HBO and CERN.

tinyurl.com/9m5rn3c

Cisco gulps down vCider

CISCO LAST week announced its acquisition of privately held vCider, a developer of virtual network overlay technology for secure data centers. The vCider technology includes a controller for multi-tenant distributed virtual networks, which Cisco says will "play an important role" in its Open Network Environment (ONE), particularly in support of the open source OpenStack APIs for cloud orchestration. Cisco joined the OpenStack effort 18 months ago and is contributing to the OpenStack Quantum API, which supports a series of virtual and programmable network plug-ins, including Cisco's. The vCider code will be integrated into Cisco's current development of the OpenStack Quantum network service. Terms of the

acquisition were not disclosed.
tinyurl.com/9eklrmk

IETF starts work on next-gen HTTP standard

"IT'S OFFICIAL: We're working on HTTP/2.0," Mark Nottingham, chairman of the IETF Hypertext Transfer Protocol working group, tweeted last week. The group will use the IETF standard SPDY protocol (developed by engineers at Google as a way to hasten the delivery of Web content over the Internet) as the basis for the updated protocol, which is expected to better accommodate complex and bandwidth-hungry applications. Version 2.0 of HTTP will reduce latency and streamline the process of how servers transmit content to

browsers. It must be backward compatible with HTTP 1.1 and remain open to be extended for future uses as well. The protocol will continue to rely primarily on TCP, though other transport mechanisms may be substituted. tinyurl.com/cfwe6uo

IT VIDEO

'Givit' a try

Greg Kostello discusses at DEMO Fall 2012 how his product makes video editing on an iPhone easier.
tinyurl.com/9426ep9

also offers the possibility of using voiceprints in order to verify that the phone is actually in the user's possession. tinyurl.com/8u7q9lw

Half of U.S. adults toting a tablet or smartphone

HALF OF American adults have mobile Internet access via a tablet or smartphone, according to a new study from Pew Research Center. What's more, the report found major shifts in the tablet market over the past year alone. While the iPad made up 81% of tablets owned in the U.S. in 2011, that number fell to 52% in the more recent study. Android-based devices now make up 48% of the market. Meanwhile, smartphone ownership rose 9 percentage points, from 35% to 44%. tinyurl.com/803hl3





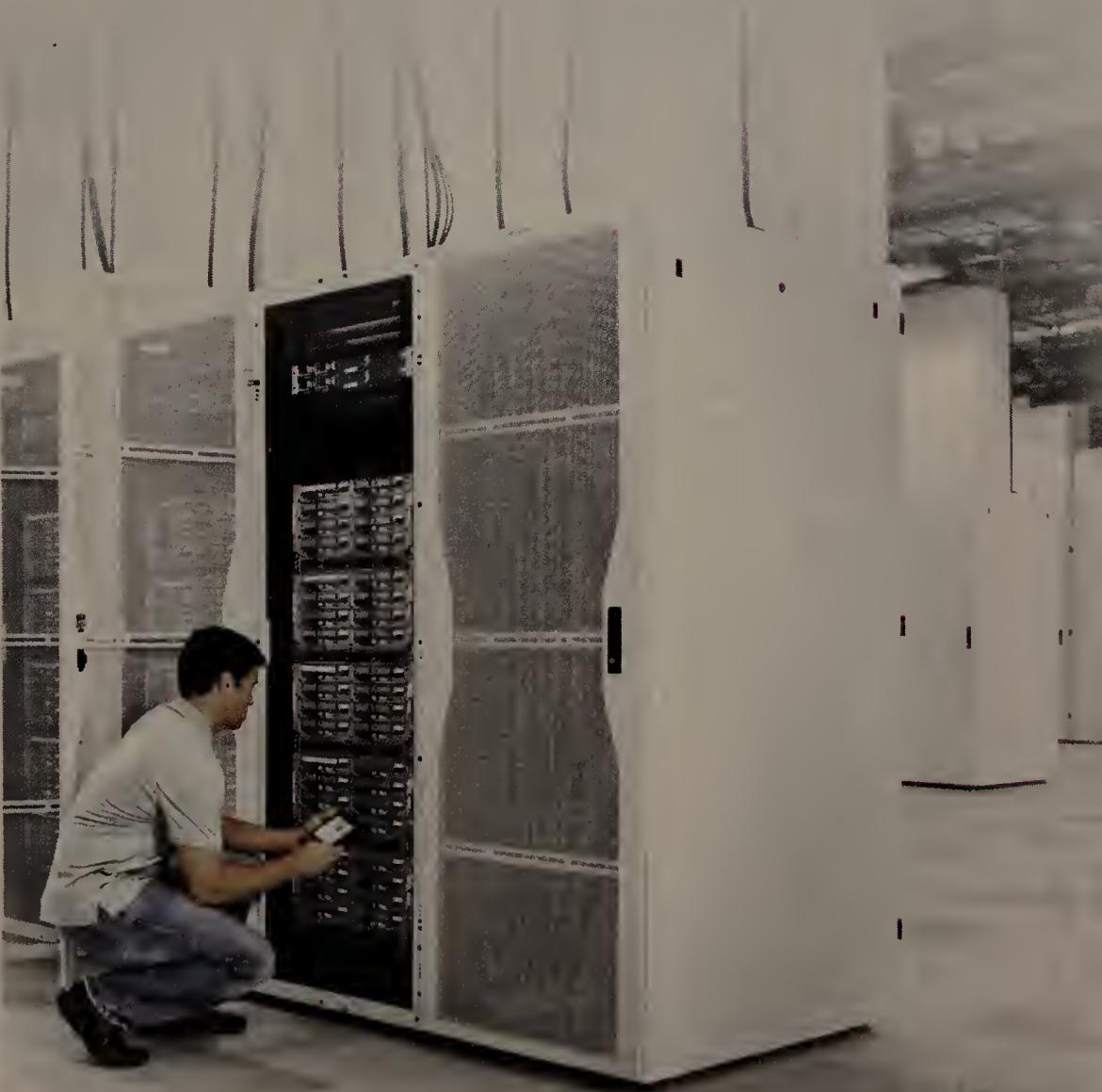
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Microsoft Lync: Not a PBX killer yet

BY TIM GREENE

MICROSOFT IS talking about its upgraded Lync unified communications platform, revealing client support for more devices, server features for better meetings and collaboration as well as integration with the peer-to-peer voice and video service Skype.

While it is clearly a good UC choice for customers with needs that align with Lync's strengths, it's not yet a platform that can jump in readily to replace traditional PBXs in environments heavily reliant on traditional desktop phones, experts say.

Still, Lync is getting closer and its new features are bringing it into closer parity with UC leaders such as Cisco and Avaya, they say.

In touting upgrades to Lync 2013 — no release date has been set — Microsoft highlights its adoption of H.264 scalable video coding (SVC), a video codec standard that makes it relatively simple to display video on a range of devices, meaning Lync can support participants on screens ranging from smartphones to room displays, says BJ Haberkorn, director of product marketing, Microsoft Lync.

In addition, video displays by Lync clients has been upgraded to show up to five participants on-screen at the same time, an improvement from having just the active talker on display. The view of those five is optimized depending on the number of participants and what other conference tools are being used.

Lync 2013 adds voice and video over IP for all devices, meaning that a device connected to a Wi-Fi network can participate in audio and video calls despite being disconnected from a traditional phone link. So users equipped with smartphones and tablets can conference over IP networks.

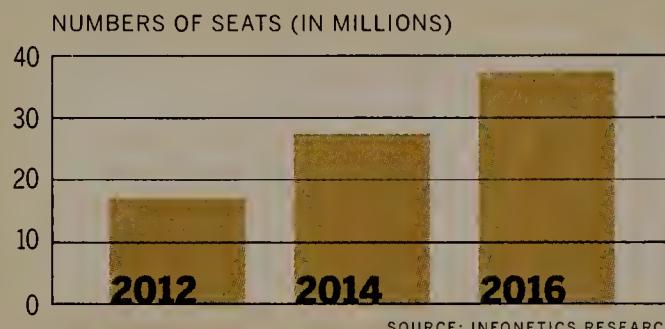
This is especially important to iPad users, he says, because the devices don't support cellular phone networks. So they can join conferences, register presence and instant message other Lync participants.

The latest Lync client supports Windows 8 with a reworked interface that embraces touchscreens, which Haberkorn refers to as the Windows 8 paradigm.

Peer-to-peer voice and video service Skype is federated with the upcoming Lync server. That means corporate users working off a Lync enterprise network could provide and receive presence information with users of Skype. They could also establish audio calls

Rush to unified communications services

Over the next four years, the use of hosted VoIP and UC services will more than double, according to Infonetics.



with Skype users, but not video calls. Microsoft has that ranked as the next feature it will work on after the initial release of Lync 2013, Haberkorn says.

Last summer, Microsoft added Lync to Phone, a service that lets Lync users complete calls to and receive calls from the public phone network using the Lync Online Client. Such services are available only in the U.S. and U.K. through third-party public phone network providers.

Microsoft is pushing Lync to application developers to include UC tie-ins to applications they write. An app could include links to information about parties listed in the user's address book and enable connecting with them directly from the application.

Microsoft has already done this with many of its productivity applications in Office where communications can be tapped via what is known as a rich content card that lists contacts' name, email, phone, instant messaging and presence information. That can include information about others sharing documents via SharePoint in the SkyDrive cloud.

For example, OneNote is better integrated within Lync meetings for taking notes, and within Outlook it is simpler to send invitations to meetings.

When Lync is upgraded, it will have clients for PC desktops including Windows 8, Mac OS X, iOS, Windows Phone and Android. That will support tablets — used mainly within organizations — as well as smartphones.

Lync's look will be streamlined, cutting out the chrome that is now regarded as visual clutter, and making the overall look in-step with what has been done to Office applications.

All this adds up to an improved Lync, but one that still isn't for everybody, says Phil Edholm, president and principal at PKE Consulting.

The reason is that not all businesses have uniform communications needs. He divides workers into three groups: knowledge, information and services, Edholm says.

The knowledge workers, such as engineers or financial analysts, are the ones that need the wide array of features UC can provide such as conferencing, collaboration, instant messaging and presence to get their jobs done. They don't rely on strict business processes as much as the other two categories of workers, but they need to communicate a lot with each other.

They also need to communicate with information workers who do rely on business processes and who need sometimes to communicate with knowledge workers. An example: a contact center worker who uses set business processes to finalize sales but who occasionally needs to talk to a subject-matter expert — a knowledge worker — to supply information to a customer before a sale can be closed, Edholm says.

Service workers, such as delivery truck drivers, use information to direct their tasks, but don't need a UC infrastructure to do so.

"Lync is a toolset, and you need to decide who needs the tools," Edholm says, and sometimes that means deploying it to a select group.

For instance, a Scandinavian police organization client of Edholm's had 30,000 workers, only 3,000 of whom were knowledge workers. Those 3,000 needed unified communications, but most of the rest didn't, leading the organization to install Lync for some but not all.

In a company with 90% knowledge workers and 10% information workers the situation would be different. It would make sense to install UC for everybody just to avoid multiple systems and their maintenance needs despite the fact that some of the workers would use just the phone capabilities.

In a typical mixed deployment such as the police organization, the legacy telephony system could tie into Lync. Those with just desktop phones could reach those with Lync and vice versa, but the desk phone users wouldn't require new gear nor would they have to learn new ways of doing things, Edholm says.

Lync becomes a challenge when it is deployed to people who only use its telephony features. "Lync is not structured to be a telephony-only system," Edholm says. "You can do it but it doesn't lend itself to being easy to use and easy to install if it's just telephony."

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► **Lync, from page 10**

That's because while Lync may perform all the necessary functions, there may be different ways of carrying them out, which requires training.

For example, multiple line appearances where a phone can ring on an individual's desk but also at the receptionist's desk would be replaced functionally by presence, a different way of doing the same thing.

"The biggest resistance comes with going from traditional telephony to Lync," Edholm says. "This is changing somewhat and will change even more with [the bring-your-own-device trend]," he says.

Edholm says he did a comparison of Lync vs. Cisco's UC for collaboration, and he found that an important factor is what the UC system has to interface with.

If the organization considering UC has a Microsoft directory system, Microsoft business applications and Microsoft databases, as well as Microsoft personal productivity tools such as Office, it makes sense to use Lync. It was built with Office, SharePoint and Active Directory interoperability in mind, he says.

If an organization doesn't use Microsoft email, calendaring and productivity apps, then adopting UC from Avaya, Cisco, Nortel or Siemens might make more sense, especially if the existing PBX is made by one of these vendors, he says. "It's not the UC system alone, it's the kind of workers you have and the other systems you use," he says.

Lync itself seems to be moving away from controlling the traditional desktop phone in favor of a UC system that includes telephony run from a desktop PC and a server in the data center or the cloud, which has service providers showing interest in the platform.

BT, for example, is offering a new Lync-based cloud service called BT One Cloud Lync that provides Lync as a service with the infrastructure based in the BT network.

Similarly, West IP Communications offers a Lync service that supports Lync edge, mediation and federation servers in West IP data centers. The upside for customers, says Jeff Wellemyer, executive vice president of West IP, is quality of service. If these components are located on customer premises for a widely distributed Lync deployment, it makes it more difficult to ensure quality of service to all branches.

Hosted Lync isn't for all customers, though, particularly those whose media traffic is intended to stay within the LAN, minimizing WAN QoS as an issue, Wellemyer says.

He says that customers tend to progress in their use of Lync features, perhaps starting with just instant messaging, adding presence, conferencing and collaboration. ■

ShoreTel goes big in hosted VoIP

ShoreTel, which made its mark in IP telephony by simplifying unified communications and reducing total cost of ownership, recently broke into the hosted VoIP business with the acquisition of M5. *Network World* Editor in Chief

John Dix caught up with ShoreTel CEO Peter Blackmore to find out how integration of M5 is going and where he is taking ShoreTel.



q&a

You've been CEO for almost two years now and the largest development in that period was the acquisition of hosted VoIP supplier M5. Why did you acquire them and what have you achieved since?

Last year in June we discussed with our board the changes in the market and the growth of voice-over-IP in the cloud, and we agreed that ShoreTel, notwithstanding the continued strong growth in the premise, would need a cloud solution.

The issue was, do we buy or do we build? We knew we could build a cloud platform, but the time it takes to build it, scale it, get the data centers running, get new accounting systems that do very different sorts of billing than we do, it's a three-plus year exercise. So we decided to buy.

The reason we decided to buy is when the market starts accelerating to the extent cloud is, there's a window of opportunity where you can find good targets and you can also afford the target. So we think we got the timing just about right.

There are 80 voice-over-IP cloud companies in the United States and we talked to 25 of them, not as targets, but to learn and to understand their business model and understand what worked, what didn't work. Then we talked seriously to nine companies and selected M5 by November. Between November and January we did the term sheet and closed on March 23. So it was a very diligent process.

Why M5 vs. anybody else?

We wanted a company with their own intellectual property. One of M5's attributes is it can link Salesforce.com in the cloud to their voice-over-IP in the cloud; you can share data. That is a very sticky application and there are many more you can add by building a network of apps and linking it to voice. You cannot do that unless you have your own IP.

The business model in cloud is totally different to premise. You ask a customer to pay monthly one month ahead of their usage. Therefore, it takes about two years to get the return on your investment, and for that to be a good investment you need the lowest churn rate and the highest ARPU [average revenue per user]. M5 has an ARPU in excess of \$60, which we believe is the highest in the industry, and a churn rate of 0.2% per month, which is the lowest in the industry. So that was two of the key factors.

We then asked, "Is it a proven business? Do they have a proven management team? Are they ramping?" And they were doing all of the above, so that's why we chose them. We've had our first full quarter with them, which was the June quarter, and their bookings gross was 43% higher than the previous year, which is excellent.

M5 was one of the earliest players in this market. Given they've been around for so long, frankly I'm surprised they are only adding about \$15 million in revenue to your books. Have we not turned that corner in the growth curve of this whole hosted VoIP business yet?

Well, if you look at the competitors to M5, you don't have the normal names we associate with the premise. For example, we don't see Cisco and we don't see Avaya. There are smaller player and most of them have been in business for 10 years. So that was my point about when the market starts really taking off, you need to get in at the right time.

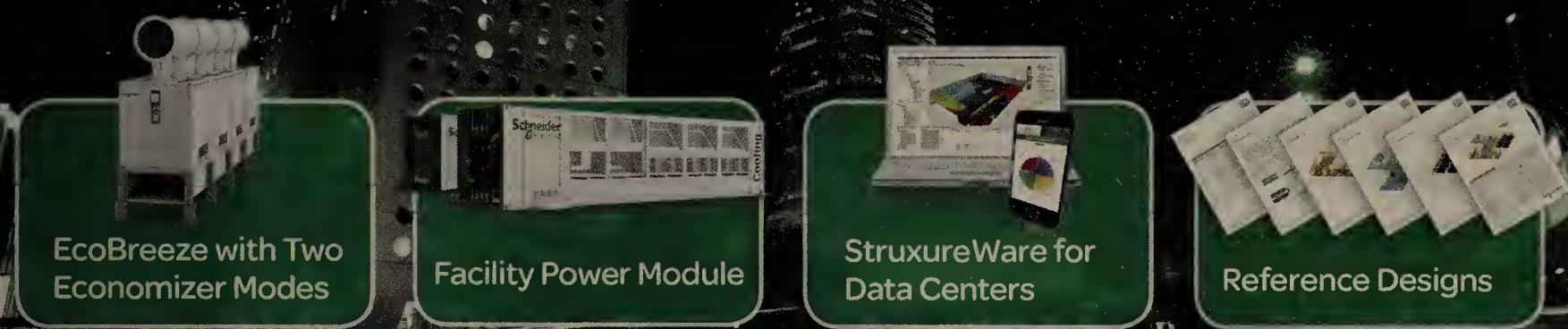
How many customers do you have on the hosted side now?

About 3,000. The average number of seats is 40.

So the typical hosted user is a smaller shop. Do you see that changing over time?

It's interesting. When we were negotiating

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The Schneider Electric logo features the company name in a bold, dark green, sans-serif font. A stylized 'S' symbol, consisting of three curved lines forming a loop, is positioned between the two words. Below the main name, the word 'Electric' is also in a green sans-serif font.

with M5 their average seat size was 30. It's now 40, so it's increasing. Our biggest customer is a human resources search agency and they've got 2,000 seats. There's no glass ceiling here. You can have bigger and bigger customers. The profile is steadily increasing, and that's why we think the M5 market is more interesting than competitors such as 8x8 and RingCentral, who have less than 10 seats on average. We're at the 40 level and it's a business customer with lower churn, higher ARPU, so we think it's the right place to be.

Your annual report says your profit margin is lower on the hosted side than on the customer premise side, which seems counterintuitive, no?

Hosted customers have a choice of either a pure Web connection or a T-1 connection to improve voice quality. The vast majority ask us to provision T-1 and therefore it reduces our overall margin. Over time, that will go away because the quality of the Web telco will steadily improve.

Speaking of time, although the hosted business is a fraction of your customer premise business today, looking out five, 10 years, does that flip-flop?

IDC says that by 2015 the voice market for premise and the voice market for cloud will be equal at \$15 billion. And then on top of that you've got to add the UC market, which will be split between the two, and that would be an additional \$12 billion. So you've got 15 and 15 plus 12. That's the size of the market, and it is split 50-50. So it doesn't flip but that's cloud catching up fairly fast with premise.

Is M5 fully integrated at this point or is there still work to do?

We're on track. The first step was to integrate finance, human resources and information technology. That was done in the first three months. We're now in the process of integrating engineering and we've been public about that with employees on both sides. We'll have a fully integrated road map and a fully integrated engineering team by December. Our plan is to keep go-to-market separate because if you have a SaaS product and a hardware and software product, very rarely can a sales team sell both well, so it's better to keep them separate. We do share lead generation, but everything else will be integrated by December.

How about the hybrid world? Is there a need for a mixed premise/cloud solution?

Yes, and we've actually allocated some serious engineering talent to develop a hybrid architecture. That was put in place a couple of months ago. The reason you need a new

architecture is for all of the security and other needs, and making sure the apps operate seamlessly. For example, if you're running a conferencing app you don't need to know whether it's being served through the cloud or served on-premise. So we are working on that. We think it's an exciting opportunity.

The first app will probably be out around July next year, and we can then also port apps that we have on-premise. So you can either sell a pure cloud solution, a pure premise solution or a hybrid. An application, for example, could be mobility in the cloud but everything else on-premise. Another example would be, you pick and choose around your facilities, like the headquarters could be on-premise because the CTO still believes that's the right thing, but all of the satellite offices could be in cloud and you could still do all your unified communications, sharing of information, it's seamless.

You guys built your reputation on unified communications and a couple of years ago you went out and bought Agito Networks for the mobility piece, so where do you hang your hat today? Do you still position yourselves as a UC company or lead with mobility or a blend of both?

We're still clearly a UC company, but UC is evolving and I think your question about mobility is a good one because the mobile user is extraordinarily demanding. They want the same set of facilities as if they were sitting at their desk and they had a sophisticated desk phone linked to Microsoft Outlook.

We've taken Agito's code, enhanced it a lot, and today we're winning a lot of premise sales because of our mobility capability. We also ported mobility to cloud and that was the first evidence you could port a premise out to cloud. We did it in 90 days and it's up and running and we've already got orders and people using it.

So what we're focused on is the experience of the mobile executive or salesperson or road warrior. Because we think that's the big win in UC applications going forward. We've got a very good reputation today for doing UC at the desk and also making it a very simple application to run from an IT perspective. What we want to do is have that brilliantly simple and high expectation of usability and the same sort of graphical user interface provided in mobile UC.

Do you get questions about mobility in most every engagement at this point?

Every engagement. And the interesting thing is our connect rate on desk phones has stayed rock solid. In other words, it's not like new customers are flipping from desk phones to mobile devices. They're keeping roughly what

they would have bought in the past in desk phones, but they're then adding mobile devices so people have a choice. But very rarely do we get a sale now without the bring-your-own-device option, and people can pick an Apple or Android or even BlackBerry for that matter, but it's almost all Apple and Android.

Is the Agito code what is powering your mVoIP capability, which lets someone on a cell call walk into an office and have that call handed off via Wi-Fi to the VoIP infrastructure?

Yes, and that is one of our biggest selling capabilities, because it's a very good hand-off. I use this every day. My home happens to have a pretty weak 3G signal, so I tend to use the Wi-Fi device in my home to support my mobile device, which is an iPhone. So if I'm on my cellphone at home and connected by Wi-Fi, when I leave to get in my car it flips to 3G, and when I get to the office it will flip back to Wi-Fi. It lowers your roaming charges and makes it very simple to use, and if you travel internationally at all it saves you a fortune.

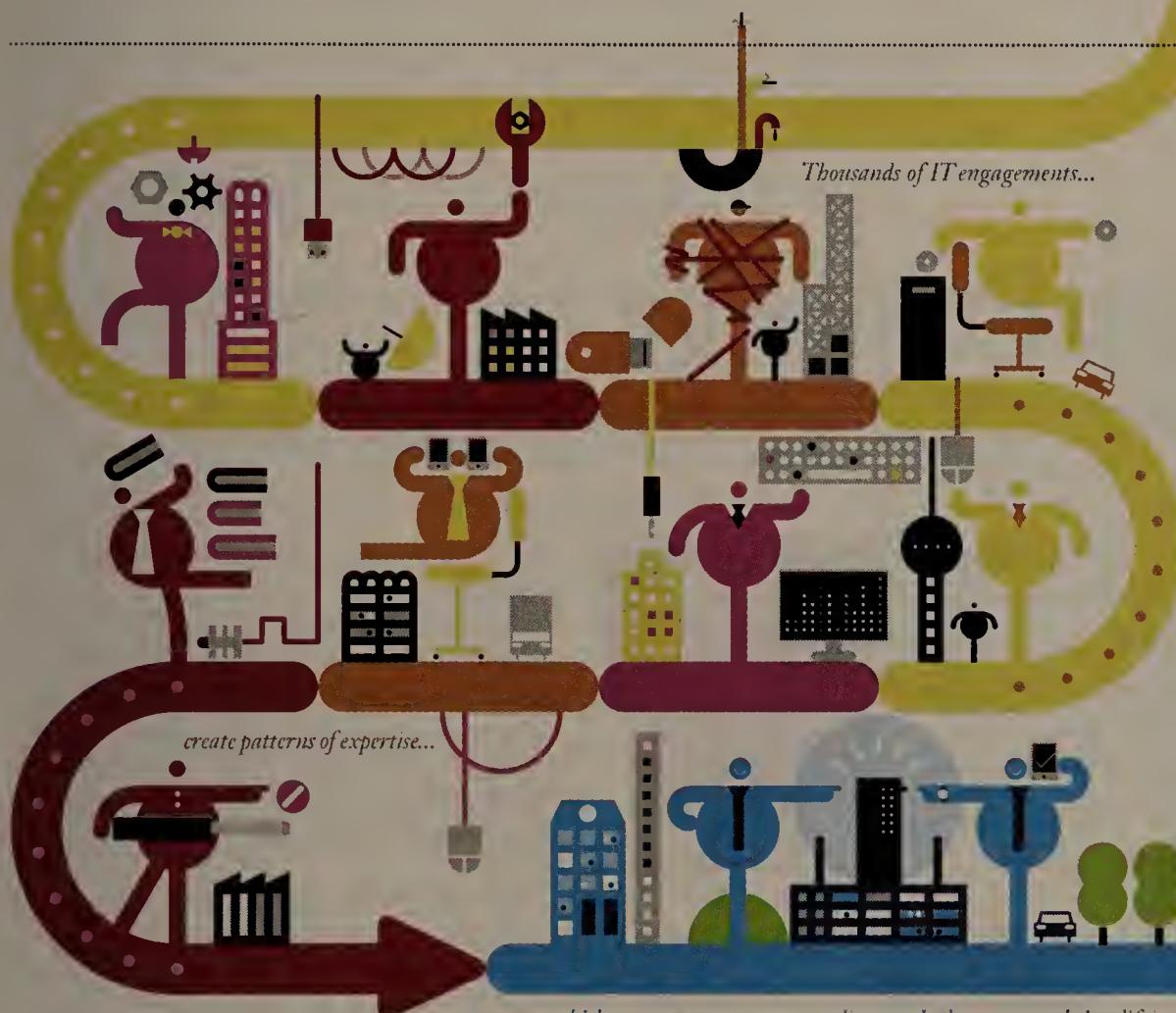
It also gives you flexibility. Sometimes in hotels people are using a lot of data and the 3G circuits get overloaded so you can't get a signal or you get dropped. I just hook up to Wi-Fi in the hotel and then I'm up and running. So I'm often having a great conversation and I can see everyone else around me getting angry with their cellphone because they can't connect.

In terms of collaborative capabilities, where does video fit in?

Video is at an inflection point. Today we partner with Polycom and LifeSize, and in ShoreTel 13 we enhanced the connectivity so it's much easier to use, much simpler to set up. But there's a lot of cloud video capability coming of age. It drastically lowers the cost of connecting video, whether you're going tablet to room, tablet to tablet, room to room. We are looking at what we put in the cloud. We would not develop our own video there, we'd pick somebody else's video to save time, but we do believe cloud video is really cool. And then obviously if you could offer that as a hybrid, so a premise customer can then connect via the cloud, that's even better. The connectivity is perhaps not quite at the same level yet as it is on-premise, but it's close enough that people will use it. So I think that's an area which is evolving very rapidly. ■

Head online to read more of this Q&A. tinyurl.com/9xjfjjk

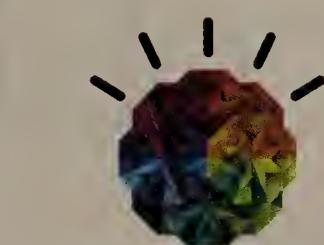
FROM DEPLOYING IN MONTHS



which automate processes, speeding up deployments and simplifying management. So you're on to the next thing.

According to Forrester, the typical IT department spends at least 33% of a project's budget just specifying, designing and procuring IT components. And once procured, it can take up to three months of tweaking before those resources are ready to be used.¹

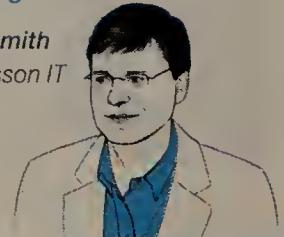
With decades of experience and thousands of deployments in the same industries, on the same topics, even for the same tasks—why is it that organizations are forced to waste massive amounts of time and resources starting from scratch with every new project?



expert integrated systems can be up and running in as little as four hours.² And once deployed, these systems can automatically scale and adjust resources as the needs of the business change—a process that might otherwise take weeks—freeing IT people to focus on larger, more strategic goals.

"It's not going to be about tinkering...It's getting back that thirst to make something."

Andrew Smith
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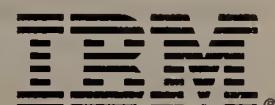
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1. Based on a 2011 commissioned study conducted by Forrester Consulting on behalf of IBM. 2. Based upon testing of the IBM PureApplication System W1500-96 with time measured from powering on the system to when it is ready to support application deployments and based upon testing of the IBM PureFlex System Express & Standard models containing one chassis and one compute node with the time measured from powering on the system to when it is ready to support a virtual image deployment. IBM, the IBM logo, ibm.com, PureApplication, PureSystems, Smarter Planet and the planet icon are trademarks of International Business Machines Corp., registered in many jurisdictions worldwide. A current list of IBM trademarks is available on the Web at www.ibm.com/legal/copytradehtml. © International Business Machines Corporation 2012.

TOOLS

TinyDuino and Parallelia: Kickstarter projects that kick computing butt

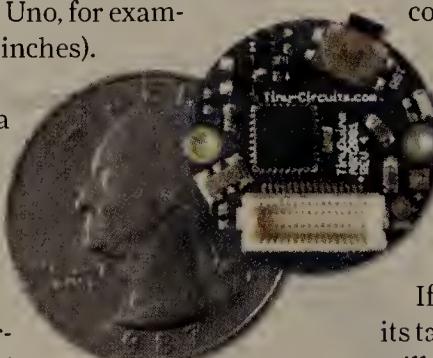
Building custom controllers using the now iconic Arduino open source computer platform is no longer the province of uber-geeks given you can now buy an Arduino Uno kit from RadioShack for \$35. And it's this kind of ubiquity that has created all sorts of variations on the Arduino platform.

The problem that some people have found with many of the Arduino board designs is that they are too big (pretty funny when you consider that the Uno, for example, is only 2.7 inches by 2.1 inches). But when you're trying to squeeze a computer inside a toy or build a flight control system for a quadcopter, the standard Arduino may be a bit large.

To solve this pressing technical challenge TinyCircuits, a firm that designs and markets tiny electronics, has just announced TinyDuino (tinyurl.com/9csh9h9), a Kickstarter project to create "an Arduino compatible board in an ultra compact package. Imagine the possibilities of having the full power of an Arduino Uno in a size less than a quarter!"

At \$19.95 this minute open source computer is a steal and the company also offers a number of similarly tiny "shields," daughterboards that provide additional functionality such as USB and LED displays. As of this writing the project has raised \$33,368 on a goal of \$10,000 and there's still 14 days to go!

That board too big? TinyCircuits also has the TinyLily (tinyurl.com/9p79tk2), which is the size of a dime and tough enough to be washed! It's designed for "e-textile" and



TinyDuino provides the full power of the Arduino Uno in a smaller size.

wearable applications. Again, this computer is a steal at \$9.95!

Oh, you'd rather build a more powerful computer? How about your own supercomputer? For cheap? If so, I have just the thing you're looking for: the Parallelia (tinyurl.com/cm6yxee), a Kickstarter project from chip-maker Adapteva.

If the Kickstarter project raises its target of \$750,000 Adapteva will develop and sell the Parallelia board, which, at 3.4 inches by 2.1 inches, is slightly larger than the standard Arduino board, with a 16-core Epiphany-III running at 13GHz to produce 26 GFLOPS at a price of \$99 each!

Considering that just 12 years ago \$1,000 per GFLOPS was a breakthrough, it's pretty amazing to think that the cost has dropped to 26 cents per GFLOPS!

And as to whether the company can deliver, its street cred is good: Adapteva has been in the chip business for more than four years and reckons it has something like \$4 million invested in the design of its Epiphany chips. Even better, the company's Epiphany-III 16-core



Mark Gibbs' Gearhead

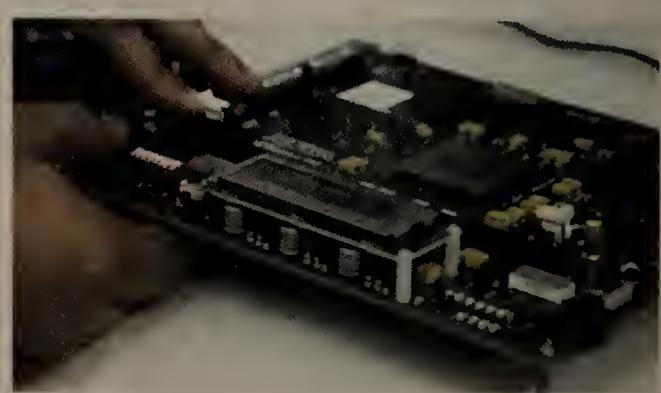
65nm processor has been in the field for almost a year.

The Parallelia board will ship with a Dual-core ARM A9 CPU running Ubuntu, 1GB RAM, a MicroSD Card slot, two USB 2.0 ports, two general purpose expansion connectors, 10/100/1000 Ethernet, and an HDMI port as well as the entire tool chain which Adapteva sells for several thousand dollars.

But wait! There's more! If Adapteva reaches its Kickstarter "stretch goal" of \$3 million the company plans to offer a board based on its Epiphany-IV chip with 64 cores that will run at 45GHz and deliver 90 GFLOPS for...gasp...\$199! What is also really impressive is the Epiphany architecture achieves 72 GFLOPS per watt, exceeding the performance goal set by DARPA of 50 GFLOPS per watt by 2018.

So far the Parallelia project has raised \$141,786 and it has 25 days to go. Just imagine what you might be able to build with this system! I've become a backer and you should too, because this is the sort of technology that will make a lot of tough computing problems much, much easier. Plus, I like the idea of having enormous power under my control. ■

Gibbs is apparently power-mad in Ventura, Calif. Feel the force at gibbs@gibbs.com.



Parallelia makes Gibbs power-hungry.

GADGETS

Checking out cool stuff at DEMO Fall 2012



Keith Shaw's
Cool Tools

GREETINGS FROM THE DEMO

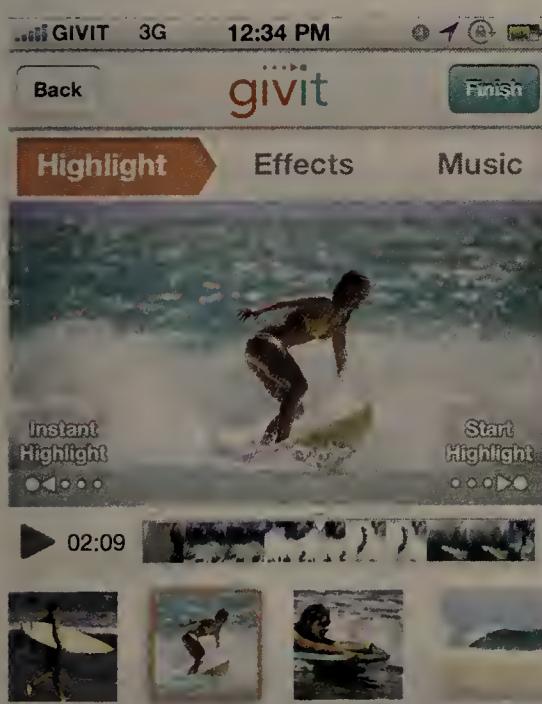
Fall 2012 event in Santa Clara, Calif., where more than 70 companies launched new sites, apps, services and, in some rare cases, actual physical products. For more than 20 years, the DEMO events have showcased companies that have gone on to greatness (to be fair, several companies have also vanished after appearing here), so it's always a good barometer of what might be coming down the road next.

It's always a good event to see what types of problems are being solved via technology across the spectrum — whether consumer, vertical markets, enterprise or even within the Internet infrastructure itself. (Disclaimer: The show is co-produced by the IDG Enterprise events group.)

Here's a bunch of products/companies I was impressed with, at least in the sense of things I might end up using a few days, weeks or months from now.



George Huff - Opal CEO



► **Givit:** Millions of people have taken video footage with their phones, but more often those videos just sit on the phone, because video editing takes a big commitment and is hard to do. Givit wants to change that. Its very cool (and free) app works for iPhone users

(Android coming later), allowing them to take a video clip and choose the best highlights from the clip by touching the screen (a tap on the left picks the last seven seconds; a tap on the right lets you choose a start/end point). The app also lets you add some basic effects (like slow-motion, instant replay and speed-up) and music to your video, and of course you can then share and upload.

► **iBuildApp:** A very sleek platform that lets people build their own mobile apps — the service includes more than 500 templates/widgets, and users of the site have created more than 66,000 apps. I want to try this out to see if a very-non-developer guy like me could create an app that would be worthwhile. Stay tuned on this one, too.

► **Ube:** Pronounced "You-Bee," the company showed some Android-powered devices that can plug into your power outlets, providing Wi-Fi connectivity for "dumb appliances" that can then be controlled via a smartphone app. Control lights, TVs, etc., without needing propriety

equipment, installers, etc.



► **Opal Brainstorms:** This social software for use within companies helps unlock innovation and ideas from people who might not normally be allowed to participate in brainstorming sessions (or who might be afraid to). There's a very cool interface that seems to combine features found on the public Quora site (asking questions of users) and Pinterest (ability to post photos/videos/thoughts within a square-like design).

► **Tellagence:** Claiming to be able to "predict word of mouth," this social analytics tool can

map a brand's social connections, and then give the brand a list of 10 other sources that can help spread their message to have the most impact across the network. For companies struggling to find the right people to help spread messages across the social sphere, Tellagence could be a very valuable tool. ■

CHECK OUT

[NetworkWorld.com](#) and [DEMO.com](#) for more coverage from DEMO, as well as our slideshow featuring the 20 coolest products at the show (tinyurl.com/9drnw7m).

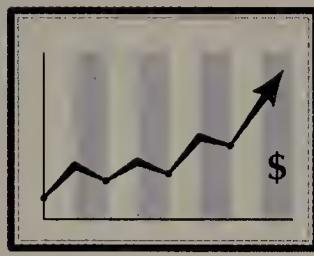
Shaw can be reached at kshaw@nww.com.

ECS ISSUE

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ECS

ENTERPRISE
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HOW TO DRESS UP

BY CHRISTINE BURNS

YOUR CLOUD RESUMÉ

Building cross-disciplinary skills is key to success in the cloud

IT professionals who have learned to work across traditional borders are the hot ticket in the current cloud-crazy job market.

When David Grimes, CTO of managed and cloud service provider NaviSite, based in Andover, Mass., is looking to fill jobs at both the junior and senior level, he's not looking for folks who have stayed centered in a particular professional silo like application development, server management, network engineering or data storage.

Rather, he wants to hire someone who has trained across several of those IT disciplines.

"Moving forward it's going to be difficult to navigate a career in the cloud if you are solely operating within those traditional vertical alignments," Grimes says.

Francesco Paola, vice president at consultancy Cloud Technology Partners, explains that burgeoning cloud concepts like software-defined networking (SDN) and orchestration portals require IT professionals to have a solid working knowledge of the fluid, underlying cloud networking infrastructure, understand how cloud-enabled applications need to be built to ride on those rails, have insight into how server virtualization affects both of those parts of the picture, and be clued into how security can be wrapped around the whole shebang.

"In a cloud-based deployment, there can't be the kind of technology handoffs between silos in IT we have seen in the past. To achieve the efficiencies of a cloud investment, there has to be staff that can manage the layers of the cloud in cooperation with each other," Paola says.

The exact titles for these new hybrid jobs — as well as the set of duties to be carried out by the individuals who fill them — are still in a state of semantic and substantive flux. Some, like cloud architect, cloud software engineer/developer and cloud systems administrator, do indeed make the "cloud" bent quite obvious.

While others — like DevOps, for example — describe which two old IT silos — straight development and straight operations — have morphed into a new line item in the cloud focused IT budget. And still others — traditional positions like project manager, business systems analyst and

network architect — are evolving into jobs that require their occupants to work in the cloud daily.

Joe Coyle, CTO of Capgemini North America, agrees with Grimes that IT people with cross-training have a leg up in the new cloud world. "I can no longer interview application developers solely based on their application development skills. I need to know how well they understand how those apps intricately map to the underlying cloud infrastructure it runs on and how they will react if that underlying IaaS [infrastructure as a service] needs to be changed," he says.

That said, "What people want and what they can get are two different things in this market," says John Reed, senior executive director of Robert Half Technology, a worldwide IT staffing firm headquartered in Menlo Park, Calif.

Reed says professionals who are experts in cloud computing, software as a service and virtualization are in high demand, but those with combined skills in server, software and networking are the most sought-after in the current IT job market.

Reed advises senior IT staff looking for cloud talent to realistically set their expectations. "At this stage you're not going to find a cloud project manager who has five migrations under their belt. You'll be lucky to find them with more than one," Reed says.

More than a dozen CIOs, headhunters and IT training professionals interviewed for this article contend that veteran IT professionals who have had the time, inclination and opportunity over the past year or two to get cross-educated or pick up on-the-job cloud experience are few and far between.

Steve Caniano, vice president of cloud strategy and business development at AT&T Business Solutions, oversees both the company's growing cloud services business and a team of thousands of IT professionals supporting that venture. "There are just not enough folks that have mastered the cloud yet," says Caniano, who expects that it will be at least five years before the supply of cloud professionals will meet the demand.

"It's a seller's market. And for the foreseeable future, we are going to have to be willing to pay a premium to get this cross-disciplined cloud talent," says Grimes, adding that the best place to look for them at the moment is in the consulting world.

TOP 10 CLOUD RELATED JOB TITLES

If you visit the popular tech-focused job site Dice.com and search for cloud computing-related jobs, you'll get more than 3,800 hits. According to Alice Hill, managing director of Dice.com, that's up 72% over last year.

Basically, cloud is a segment of the jobs market that is going gangbusters. On the day Hill's team culled the list as part of the research conducted for this article, **the No. 1 position that employers were looking for was cloud architect.**



THE REST OF THE TOP 10 ARE

CLOUD...
SOFTWARE ENGINEER
SALES EXECUTIVE
ENGINEER
DEVELOPER
SYSTEMS ADMINISTRATOR
CONSULTANT
SYSTEMS ENGINEER
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CONTINUED ON PAGE 24



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CONTINUED FROM PAGE 22

According to salary statistics published by several sources, Grimes is going to have to pay a good bit more.

Data collected by Dice.com, a leading career site for technology and engineering professionals, shows that cloud has been one of the fastest-growing skill segments, with related job postings up 72% over last year. That comes out to more than 3,800 positions listed on any given day. To put that into context, overall tech jobs on Dice are up only 4% year over year.

Dice.com data also shows that cloud computing professionals in the United States this year will earn, on average, \$92,830, compared to the median \$81,327 tech salary.

Robert Half Technology research, according to Reed, shows that cloud computing-related salaries are continuing to rise 8% to 10% annually, compared with 3% to 4% growth in the average IT salary. In research the firm conducted for its 2013 Salary Guide (to be released next week), the hiring environment is only going to be tougher next year.

The report states that as the pool of qualified candidates shrinks, and demand grows, competition for IT professionals with mobile, big data, cloud and virtualization experience will receive multiple offers and hold much of the bargaining power.

"Job seekers in traditional IT roles looking to advance themselves either internally or by moving out in this very favorable market need to repackage themselves with some level of cross-training," says Alice Hill, managing director of Dice.com. Hill says this cross-training can come from both external classes and certification programs or by seeking out on-the-job cloud project experience, especially if it's outside the scope of their existing job description.

Server virtualization vendors from Microsoft to VMware — and every Linux-based derivative in between — as well as wildly successful proprietary IaaS providers like Amazon and more open organizations like OpenStack have accessible training programs. These programs can help cross-train network staff about hypervisor internals and server administrators on why OpenStack's Quantum "networking as a service" project will impact next-generation cloud deployments.

Capgemini's Coyle thinks good job candidates, from a practical standpoint, only need to have one flavor of formal

These cloud titles, and the job descriptions behind them, are very much in a state of semantic and substantive flux. But the "cloud" bent of the Dice.com listings is quite obvious.

Hybrid titles

In addition to the top 10 cloud-specific titles, there are several hybrid titles, like DevOps, which combines straight development and straight operations.

And still others, like project manager, business systems analyst and network architect, are evolving into jobs that require cloud expertise.

Generally speaking, a cloud architect evaluates a company's computing needs and deploys appropriate cloud solutions to meet them. The generalizations stop there.

Micros-Retail, a division of Micros Systems, is a provider of technology and services for the retail industry with a customer list that includes Cabela's, Godiva Chocolatier, Ikea, Staples and Starbucks. The Ann Arbor, Mich.-based firm posted an in-house cloud architect job in late September. Candidates need to be both expert in large-scale distributed system design and implementation and must view cloud computing as the future of online services.

The company wants this person to bring its future cloud from design through post-release support with an emphasis on automated metrics collection and analysis; life cycle automation systems, robust monitoring and alarming systems with automated repair; and automated right-scaling.

The ad says the right person will have experience with Amazon AWS, software as a service (SaaS) and online service-oriented architecture (SOA) models; be comfortable with the technologies, the trade-offs and the design patterns of the cloud; have a strong and proven Java and object-oriented development skills; and, have Perl, Python, Ruby or other scripting language experience.

It would be useful, also, if the job seeker has created large Internet-scale distributed systems, has created other PCI-compliant solutions, understands distributed databases and sees the big picture of delivering a 24/7 service.

In that same time frame, a worldwide services outfit is trying to poach a cloud architect who's built a cloud for a large enterprise, has 15-plus years of experience developing high-performance databases, has a passion for big data, expert knowledge of Core Java/C++, multi-threading and analytics, wants to be hands-on more than half of the time spent on the job and has a doctorate in a related discipline.

These job descriptions vary wildly — and they are likely to for a while — because it's "still an open play on how any organization is going handle a whole host of cloud design and implementation issues," says Chris Brenton, a cloud security architect at CloudPassage, a cloud server security company.

"So yes, they are looking for the right person, but in a sense they are also looking for some direction in terms of how the cloud can best be implemented in their own, unique environment," Brenton says.

Crossing boundaries

In a recent newsletter to its job seekers, Dice.com referred to the role of DevOps as "Brangelina" because it is widely considered to be an IT department super-coupling, the union of developer and systems administration skill sets.

There are on average 200 DevOps listings daily on Dice.com. These listings comprise DevOps engineers, leads, contractors and specialists. A search on www.simplyhired.com showed more than 1,500 listings asking for some DevOps experience. According to recruiters, hiring these folks is a big headache for employers and involves multiple offers, counteroffers and increasingly bigger salaries.

According to Rick Bauer, a senior member of CompTIA's skills certification staff, which is currently conducting research for an IT Job Task

CONTINUED ON PAGE 26

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CONTINUED FROM PAGE 24

vendor-specific training in each of the cloud platform segments. For example, if a DevOps candidate has picked up a certification in VMware, "it is a good indication that he's got an understanding on how a virtualization platform operates and can work on the job to apply that across a hybrid cloud where other hypervisor software is in use," Coyle says. Likewise, if she understands how Rackspace runs its IaaS platform, she can map that to Amazon's offering.

NaviSite's Grimes suggests that IT professionals should be selective regarding their cross-training. "Say you are a solid Linux system engineer and you want to dive into networking, you could work on a CCNA [Cisco Certified Network Associate] to get a broad understanding of networking and acquire a good base of skills. But going for, say the CCIE [Cisco Certified Internetwork Expert], is going to put you too far up the Cisco stack, which would be overboard for this purpose," Grimes says.

Paola advises that senior IT management can push the idea of cross-training along by merging teams of complementary disciplines, like system administrators and network administrators, for example. "It also makes sense to seed these teams of seasoned professionals with recent college graduates who are more open to cloud computing and can be trained in this cross-discipline environment from the start," Paola says.

Grimes warns that IT management must be watching for potential turf animosities and suggests nipping them in the bud with cross-discipline design sessions that both open the lines of communication and reinforce the message that the company is determined to break down traditional vertical IT divides.

Mark Herbert, CTO at intY, a U.K.-based cloud services aggregator that runs its U.S. business out of Florida, argues that while cross-training is a good idea, only hands-on cloud work can provide data centric personnel with the flow and pressures of working in a non-stop services environment that defines cloud computing.

On-the-job cross-training also offers insight into two irrepressible facts about cloud computing, says Brett Adam, CTO of rPath, an enterprise platform-as-a-service (PaaS) company in Raleigh, N.C., that recently published the "Enterprise Cloud Adoption Framework," a document that outlines some best practices for cloud

analysis to be published later this year or early next, there are likely many more hybrid positions coming down the pike for IT professionals working in the cloud.

While they are not yet developed enough to warrant nicknames akin to Hollywood super couples, Bauer expects couplings to happen around network operations and server administration and network operations and storage management.

John Reed, senior executive director of Robert Half Technology, a worldwide IT staffing firm headquartered in Menlo Park, Calif., argues that IT departments looking to roll out cloud implementations are also looking for IT folks with hands-on experience in cloud to step into the roles of both business systems analysts and project managers.

Qualified candidates for business systems analyst jobs would effectively be able to take a critical look at which IT systems can and can't be pushed to the cloud. "And of the former, these analysts need to have both experience and critical analysis skills to understand which of those need to go into the cloud first to help the company achieve the gains the cloud promises," Reed says. ■

adoption. "The first is that automation is good. And the second is with automation, comes a reduction of choice. So being an IT professional working in the cloud, you've got to come to grips [that there are] fewer choices on how you build your apps, how you run your network, and how that drives the business," Adam says.

If on-the-job training is not available, the low entry price of cloud computing also comes in very handy for cross-training purposes, says Chris Brenton, a cloud security architect at CloudPassage, a cloud server security company. He advises IT professionals to take advantage of the 30-day free trial subscriptions most cloud service providers offer potential customers as an opportunity to work with a broad range of products.

Another avenue for hands-on experience is to offer to do pro bono work for nonprofit organizations that need technical assistance to run more efficiently in the cloud.

Proving your cloud chops on paper

We were able to identify just two third-party cloud knowledge certifications — CompTIA's Cloud Essentials and the Cloud Security Alliance's Certificate of Cloud Security Knowledge (CCSK) — that carry any weight in the industry at this point.

However, having either on your resume is more a testament to general knowledge about how cloud computing works (in the case of the CompTIA certification) and the

principles that IT professionals need to know to securely migrate operations to the cloud. Neither group claims that these certifications guarantee deep technical expertise in the cloud.

However, representatives of both indicated that future iterations of both prerequisite training and testing will move in that direction. Next year, CompTIA will be offering a Cloud Plus certification for which Rick Bauer, a senior member of CompTIA's skills certification staff, says that IT professionals will have to be "pretty deep in the technical weeds" to collect a passing grade.

Neither organization will go on record to say exactly how many IT professionals have taken their tests or publish pass/fail rates, but both say that the numbers are rising rapidly.

Bauer did disclose that his firm was gearing up to administer between 500 and 1,000 Cloud Plus tests next year.

The CSA's COO, John Howie, contends his outfit has seen a dramatic increase in people seeking out the CCSK in the past year.

"But an even better indication of the interest is the number of companies that are coming to us and saying they are requiring whole teams to become CCA accredited," says Howie, adding that the CSA responds to that by working with member training organization to complete on-site cloud training. ■

Burns is a freelance writer. She can be reached at cburns1227@gmail.com.

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BUILT FROM THE CLOUD UP.

NAS appliances: Storage and a lot more

New generation of NAS boxes offers text-searching, print servers, cloud backup, etc.

BY JAMES E. GASKIN

When we did a roundup of network-attached storage devices seven years ago, the products boasted an amazing (for the time) 1TB of disk space. This time around, we're testing six units that sport 8TB or larger storage capacities. While the disk space has exploded, the investment remains modest, sometimes at a lower actual dollar figure than the first batch back in 2005.

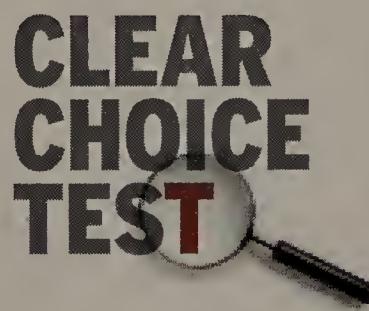
The products in this review include the Buffalo TeraStation TS5400D, Iomega StorCenter px4-300d, LaCie 5big Office+, Seagate BlackArmor NAS 440, Netgear ReadyNAS Pro 4 and the QNAP TS-569 Pro. All include at least 8TB of raw disk storage.

These appliances share many features, such as being relatively small, running quieter than a desktop PC, and offering fairly simple installation and configuration, as befits devices sold to small businesses as well as enterprise workgroups.

All run some version of Linux, except for the LaCie, which now uses Microsoft's Storage Server Essentials operating system. All have greatly improved the ability to backup their contents across the LAN or across the Web, using one or both of their dual Gigabit Ethernet LAN ports and USB connections.

All act as a Time Machine server for OS X device backup. All provide enough user and disk management to be the only shared storage in a small company, or a reliable department storage addition in a large company. If that large company wants to make the units an iSCSI target, every unit supports that option.

In addition, each appliance includes a print server that will support any USB-connected older printer. All units tested run either RAID 5 or RAID 6 to keep your data safe in case one of the drives fails, but all support other RAID options or allow you to configure



your appliance as one giant pool of disk space.

But all have different strengths that make them suitable for different situations.

- Although all units integrate with Active Directory, the LaCie may be more attractive to some Windows shops because of its Storage Server Essentials OS.
- Iomega and Buffalo offer full-text indexing and searching of stored files.
- Seagate, maker of the internal drives in many units, leverages its drive production to deliver the most storage per dollar.
- Several models front-end popular cloud storage services such as Amazon S3, and Netgear acts as the on-premise gateway to Egnyte's file server in the cloud.
- QNAP includes enough extra application support to be a complete file server for a small company.

QNAP TS-569 Pro

QNAP sent its five-disk unit, holding 3TB disks, which provided 8.5TB of usable disk space after RAID 6 (keeps data safe even with two failed disks) and operating system overhead. The QNAP product line provides desktop NAS systems with two-, four-, five- or eight-drive bays, and all usually ship diskless, so end users or resellers can pick the best disk capacity for the job at hand.

The black front gives way to a gray body that looks to be the same material used in high-end kitchen appliances. On the front are the disk drive carriers, each with an LED, the power switch and LED, a two-line

16-character display that turns off quickly, and a USB port with a "Copy" button. Plug in a USB storage device, hit the button, and the USB contents will be automatically copied to a predefined location inside the QNAP storage.

On the back are the two Gigabit Ethernet ports, along with four USB 2.0 ports, two USB 3.0 ports and two eSATA ports. Unusual is the single HDMI port, which supports some of the media applications available to the QNAP. The huge but quiet fan adjusts speed as necessary.

Setup is straightforward, with a couple of nice surprises. The UI includes big rounded icons, like apps, that make it look friendly. After booting, it grabs an IP address from any DHCP (Dynamic Host Configuration Protocol) server, and launches a nice entry screen when clicked in Explorer.

Our unit came with disks pre-installed, but when installing your own, you can configure the storage space as a single disk volume, a JBOD (Just a Bunch Of Disks) linear disk volume, or RAID 0, 1, 5, 6 or 10. The five 3TB disks in our unit were configured as RAID 6. You can engage an encrypted file system if wanted.

A wizard offers a way to create multiple users at once, if they all need the same prefix. Define the prefix, the initial password, whether each user should get a private folder, then hit enter. Users will have to set a new password when they log in. You can also load users and groups via TXT, CSV or a BIN file from another QNAP NAS.

Extras include the ability to backup NAS data off-site to Amazon S3, ElephantDrive or Symform. Applications abound, far beyond the normal media and iTunes servers on other appliances, and the fairly common surveillance system support. LDAP and MySQL server software is included, as is antivirus. Clicking the QPKG Center icon leads to dozens of available apps, including Asterisk, Joomla, Mono, Python, Tomcat, vtiger CRM,

NETRESULTS

Product	TS-569 Pro	ReadyNAS Pro 4	5big Office+	StorCenter px4-300d
Company	QNAP	Netgear	LaCie	Iomega
Price	\$1,000-\$1,100 (diskless)	\$2,400 (8TB)	\$1,450 (10TB)	\$1,950 (8TB), \$2,750 (12TB)
Pros	Easy setup, cloud backup, bonus apps, antivirus	Small, easy to set up, offers cloud backup	Stylish, Windows OS, integrates well with Windows shops	Full-text search functionality, cloud backup, updated look and feel
Cons	Price doesn't include disks	Old-fashioned interface	Installation not as easy	Weak security

WordPress and Xeams mail server.

No other NAS tested works so much like a generic Linux server as QNAP.

Netgear ReadyNAS Pro 4

The smallest unit, smaller than many two-slice toasters, Netgear's ReadyNAS Pro 4 is all black with a two-line display that disappears quickly. ReadyNAS delivers 5.4TB (after RAID 5 overhead), and one USB port on the front of the box, plus two USB ports and two Gigabit Ethernet ports on the back.

Netgear's RAIDar utility finds new NAS boxes on the network, and gets installation started through a user interface that is clean, but a bit old-fashioned. As with all units in the test, a new admin password is required. Unlike other units, the ReadyNAS Pro 4 provides a password recovery question and answer that it will email to a pre-defined address. Also unlike the other units, it includes a DHCP server that will dole out IP addresses to other devices.

There are two volumes by default — backup and media — leaving the network admin free to create the typical "public" shared volume with a name that might better fit the company, such as AcctVol or the like. A USB attached drive can be shared just like the internal disk space. Users and groups can be imported in a CSV list, and given storage quotas, like on the other systems.

For backups, Netgear offers its own hosted cloud backup as an option. Snapshot backups can be scheduled easily. Also included is a 90-day trial of Acronis Backup for end users.

Netgear has partnered with "file server in the cloud" vendor Egnyte to act as the on-premises part of Egnyte's cloud offering through the ReadyNAS add-ons feature. Other add-ons include surveillance support, NAS replication, Linux root access, and various media support tools for music and photos. There is even a community of developers



TeraStation TS5400D

Buffalo

\$1,300 (8TB), \$1,400 (12TB), \$2,150 (16TB)

Good price/performance, text search, straightforward interface

Search interface is clunky

BlackArmor NAS 440

Seagate

\$875 (8TB), \$1,425 (12TB)

Simple interface, best price/performance

Not a lot of extras

offering scores of new apps and utilities.

LaCie 5big Office+

LaCie's 5big Office+ has one iridescent blue golf ball-size combination light and on-off switch in a solid gray cube-like appliance that looks more like art than storage. On the back are two Gigabit Ethernet ports, three USB ports, one eSATA port, and access to the five included 2TB drives offering a total of 7.4 TB of space after RAID 5 and OS overhead.

The only NAS tested powered by Microsoft's Windows Storage Server 2008 R2 Essentials, the LaCie 5big Office+ will be right at home in the hands of a Microsoft-certified tech. Setup requires IE for the browser, and follows the typical Microsoft OS path. Each client needs .NET Framework 4.0 or later, but all can be installed from the LaCie box. Each user gets Windows Storage Server Launchpad and Dashboard software, whether they want them or not. The admin interface is pure Microsoft with a few LaCie logos.

LaCie offers Wuala online storage to back up local NAS data. Of course, the Storage Server software offers Microsoft shops a variety of connection and backup options not open to other NAS products in this roundup.

Users will see this NAS as less invisible than the others, because of the Microsoft client software. Also, the default public storage volume is called Documents, which may cause some confusion with personal storage areas.

While all NAS units tested here integrate with Active Directory Services, LaCie has partnered with Microsoft in a big way. While a Microsoft expert will be right at home, a small business or enterprise department installing a NAS on its own may find installing and configuring this NAS a bit more involved than some of the others. But since Microsoft is so prevalent, outside support and device management may be easier to find for the LaCie than any other of the NAS desktop devices.

If there was a style award, this box would win. And the price per terabyte of raw storage is second best to Seagate, which has a bit of home field advantage since it makes so many of the hard disks used.

Iomega StorCenter px4-300d

Storage experts from back in the days of the Bernoulli Box, Iomega has been making desktop NAS appliances for years. This model has an updated look, now clad in dark gray with black accents and a perforated front cover with a large display. Four lines of display stay on all the time and provide raw storage (5.4TB after RAID 5 and OS overhead), open storage, time

and date, and the IP address for connected networks. Two Gigabit Ethernet ports and two USB ports are on the back.

An updated user interface matches the updated housing, with an icon-laden menu down the left side and larger, friendlier icons than in previous versions for all the admin utilities. Five public shares are created by default, including Documents (rather than Public or Share), Backups, Movies, Music and Pictures. A context-sensitive help system, which is not really needed, is available on almost every admin screen.

The appliance can be put on the network for everyone to access with no security whatsoever, which might work in some small departments. Users are created one-by-one, and a scenic photo will greet them when they log in to the appliance with their browser.

Not only does Iomega offer a "My Personal Cloud" for access to the appliance over the Internet, but it also uses various cloud services for backup. Configuration tools for connecting to Amazon S3, Atmos Backup (from EMC, the owner of Iomega), Avamar and Mozy accounts are an icon-click away. iSCSI support is included, as well as tools for VMware, Citrix and Windows servers to connect to the Iomega StorCenter.

Similar to the Buffalo TeraStation, the Iomega includes a full-text search function. The interface is a bit nicer, and documents can be clicked and downloaded to your personal computer, but the displayed results aren't as complete. Both systems offer document management tools, just with slightly different search results presentation.

Easy, wizard-driven installation and management make the Iomega a good choice for small businesses, since any competent computer user can manage the system. Let's just hope they don't enable the optional, but curious, feature of linking users' Facebook accounts to their storage space on the Iomega.

Buffalo TeraStation TS5400D

The box that started the "terabytes for the workgroup" trend, Buffalo's TeraStation TX5400D still offers excellent price per terabyte, clear administration, and the text-search feature the company introduced to this segment. Solid black, with horizontal lines for a little decoration on the front, the TS5400D offers 5.7TB of open space after RAID 5 and OS overhead, two Gigabit Ethernet ports, two USB 3.0 and two USB 2.0 ports. Interestingly, the unit can boot from the USB ports.

NAS Navigator 2 software for Windows computers helps find and manage the appliance, and locates a new box on the network for configuration or administration. An aptly

named Easy Admin page, with seven big buttons leading to the TeraStation's function, can be traded for the Advanced Settings administration screen with eight admin functions down the left-side menu.

Users can be configured individually or uploaded in a CSV file. By default, new users are placed in the "hdusers" group, which can simplify access controls by limiting rights to the entire group at once. While other units have storage quotas for users, the TeraStation is the only one with a configuration threshold point to warn users when space is getting scarce.

Extra utilities for speed, TurboPC and TurboCopy, use RAM as cache to speed file copying. Ten licenses of NovaBackup software for client systems are included, as is Amazon S3 support, and, oddly, BitTorrent support is still included. A Trend Micro antivirus trial ships with the appliance.

TeraSearch, the full-text indexed search utility, has to be turned on, and the index-update time set, before it's usable. The index updates only once per day, but you can set the time so no users are inconvenienced if the index update slows performance. Accessing the straight-from-1998 search interface requires users to put the appliance IP address plus a port number (<http://IPAddress:3000/>) into their browser. Once there, the index returns answers quickly, but the files can't be accessed from the search interface.

Web and MySQL server software is included, along with iTunes, DLNA and Squeezebox servers. While the iTunes and Squeezebox support aren't unusual in this group, the Web and MySQL servers are only found on this and the QNAP appliance. Buffalo runs a DNS service to let users access their TeraStations over the Internet.

The UI for admins is friendly without cutesy icons. Services, like FTP and NFS for example, are enabled using a slider switch on the admin screen that lights up when engaged. Not fancy, but straightforward and value-oriented, the Buffalo TeraStation line still carries weight in the desktop NAS appliance area.

Seagate BlackArmor NAS 440

The only non-rectangular box, the Seagate BlackArmor NAS 440 looks like it has a brow protecting the disk storage area in the front. All black, with the two-line display on the brow, two Gigabit Ethernet and three USB ports on the back (there's another on the front), the BlackArmor looks armor-plated and serious. With 5.4TB open after the space taken by RAID 5 and the OS, the BlackArmor box and name would look just fine sitting inside a military operations center.

After getting past the EULA (End User

License Agreement, really), setting up the BlackArmor NAS 440 goes as expected. System device name, time zone, date and time settings, and the new password for the administrator away from the default are typical, and go quickly.

The plainest UI, but one still professional and functional, the BlackArmor NAS admin interface has five major headings across the top, each of which opens a topic-specific menu on the left side. Users get their own private data share by default, but a click of the radio button changes that. User shares can be encrypted, which is not the case for all devices in the roundup. External devices connected by USB can also be shared, and access controlled to same, just like the main system storage.

Ten licenses of Seagate's BlackArmor Backup for Windows are included, and the software includes bare-metal restore capabilities, unusual in client software included with NAS appliances. Data files on the appliance can be backed up to USB-connected drives, or to another BlackArmor NAS on the network.

There aren't many extras, but a media server is included, as well as a wiki server. Not a fancy wiki server, but one that's certainly functional and free with the appliance.

Like the QNAP, the Seagate BlackArmor often comes diskless, so resellers can configure the system for their customers. Depending on whether you install 1TB, 2TB or 3TB drives, the system offers 4TB, 8TB or 12TB of raw storage capacity. Fans of one-stop-shopping may like the flexibility of getting both the NAS appliance and a range of hard drives from the same manufacturer. If so, the BlackArmor NAS 440, made by people who make about half the hard drives sold, will be your box.

All these units provide terabytes of storage that can be easily integrated into an existing network and installed and managed by a competent computer user. Some offer interesting extra features, like text-search or server applications. And they will all save your files quietly and reliably. ■

Gaskin writes books, articles, and jokes about technology, and consults for those who don't read his books and articles.
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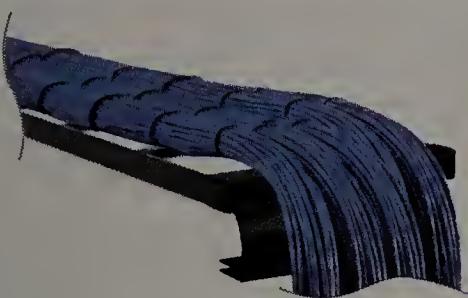
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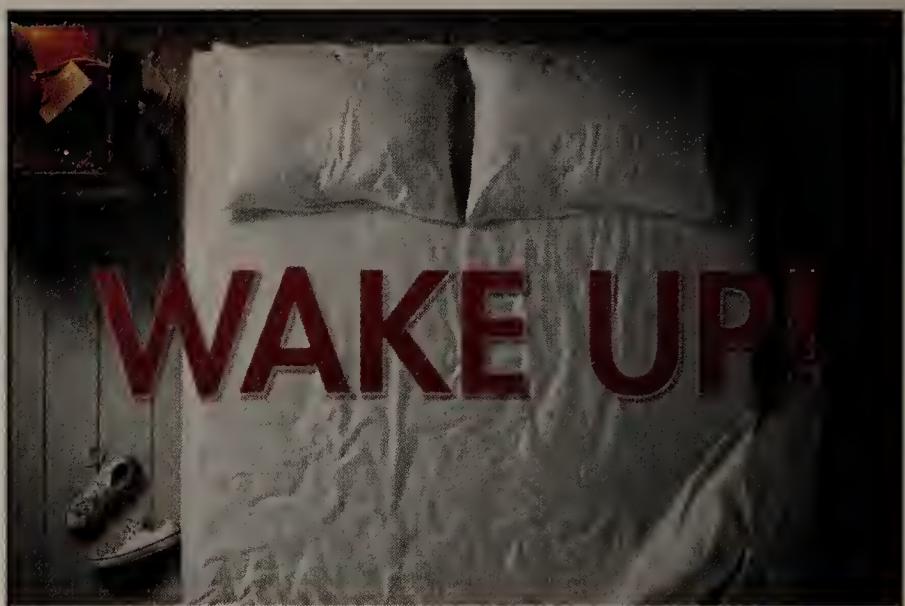
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Periodical postage paid at Framingham, Mass., and additional mailing offices. Posted under Canadian International Publication agreement #PM40063731. Network World (ISSN 0887-7661) is published twice monthly except for monthly in July by Network World, Inc., 492 Old Connecticut Path, P.O. Box 9002, Framingham, MA 01701-9002. **Network World** is distributed free of charge in the U.S. to qualified management or professionals. To apply for a free subscription, go to www.subscribenw.com or write Network World at the address below. No subscriptions accepted without complete identification of subscriber's name, job function, company or organization. Based on the information supplied, the publisher reserves the right to reject non-qualified requests. Subscriptions: 1-877-701-2228. Nonqualified subscribers: \$5.00 a copy; U.S.—\$129 a year; Canada—\$160.50 (including 7% GST, GST#126659952); Central & South America—\$150 a year (surface mail); all other countries—\$300 a year (airmail service). Digital annual subscription rate of \$29.00. Four weeks notice is required for change of address. Allow six weeks for new subscription service to begin. Please include mailing label from front cover of the publication. Network World can be purchased on 35mm microfilm through University Microfilm Int., Periodical Entry Dept., 300 Zebb Road, Ann Arbor, Mich. 48106. **PHOTOCOPYRIGHTS:** Permission to photocopy for internal or personal use or the internal or personal use of specific clients is granted by Network World, Inc. for libraries and other users registered with the Copyright Clearance Center (CCC), provided that the base fee of \$3.00 per copy of the article, plus 50 cents per page is paid to Copyright Clearance Center, 27 Congress Street, Salem, Mass. 01970.

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BACKSPIN | BY MARK GIBBS

Real programmers as an endangered species

THERE WAS a time, a long, long time ago, when quality mattered in software. In those days spirits were brave, the stakes were high, men were real men, programmers were real programmers, and small furry creatures from Alpha Centauri were real small furry creatures from Alpha Centauri.

Alas, software quality stopped being important many years ago. In the desperate rush to get to market, most companies became way too comfortable with "good enough." Recently a friend on a mail list told an illustrative tale:

"I was working for a company that had decided to implement a Capability Maturity Model program for its software development. A necessary part of CMM is to set out measurable goals based on the company's definition of 'quality software.' The company laid out two goals: on-time and in-budget. Those were its only definitions of quality. Nothing about the software doing what it was supposed to do, nothing about stability, nothing about security, not even that it had to compile. The company's CMM goals were easily satisfied by each software project delivering whatever it happened to have when the money or time ran out, working or not."

And that nicely underlines the problem ... at least, it does if you think quality matters. Just look at how many products have come out over the last 20 years nowhere near ready for prime time simply to increase revenue or market share without any thought of how big a mess might have to be fixed. You know who we can blame for starting this trend? Yep, Microsoft, the original inventors of ship early, patch often.

I'm sure you have your own examples of terrible products (do tell),

and it's obvious why they exist: Software and programmers became commodities a long time ago and now there aren't enough of the latter to go around.

Another list friend, A.M.M., noted that "tech companies are so desperate that at least one, Intel, is talking about creating a two year training program in Sacramento to fill the void. They're desperate all right — for cheap, 'good enough' people, not qualified experienced people. There aren't enough low paid minions who know how to slap together crappy tools and dump them on the market in a hurry, it seems. In this day and age, companies train customers to expect less from their products, to get at the couple few really important features they need."

Now, lest you think I might have some cunning, insightful suggestion as to how this never-ending descent into software mediocrity can be halted, I don't. The trend is actually not reversible and, even if it was, there's no commercial reason to do so. The end users' expectations have been thoroughly set to "low," there's market demand, and, as A.M.M. succinctly put it, "since the new software paradigm is online, there's no need to worry. Release it, patch it up later, take the money NOW. (barf)"

I'm sorry, but if you're a real programmer with serious skills and experience, you are an endangered species. Today, spirits are no longer brave, the stakes are all financial, and the only small furry creatures are the bean counters. ■

Gibbs is real in Ventura, Calif. Tell him of your programming chops at backspin@gibbs.com and follow him on Twitter and App.net (@quistuipater) and on Facebook (quistuipater).



NETBUZZ | BY PAUL MCNAMARA

Readers scoff at Verizon's fee explanation

LAST MONTH I wrote about Verizon's claim that IT-related costs justify its charging customers, including me, \$5 a month to keep a telephone number unlisted. Assuming that explanation to be hogwash, I invited readers to offer their own assessments ... and many did.

The consensus: hogwash. Here are a few excerpts:

"It is not that unpublishing a number costs money. ... The issue is that the number cannot be resold to third-party marketers who would love to have access to your number," writes Wolf Halton, expressing the most common of the alternative explanations. "... If this revenue model ever catches on in other industries, you might expect to receive a monthly bill from your neighborhood printer for the service of not printing your business cards."

A number of readers cited historical precedent for the fee.

"This reminds me of when they used to charge extra for providing a touch-tone line instead of a pulse line," writes Don Hughes. "The fact of the matter was that the network was touch-tone based and they had to add extra terminal equipment to provide the pulse dialing. So, in effect, that were charging more for the service that was cheaper to provide but more popular. Why? Because they could."

So obvious that even a child could see, too.

"Way back before the late Judge Greene's fantasy that breaking up Ma Bell into regional monopolies would create competition, they charged an extra buck or so per month for Touch-Tone dialing because they could get it," writes Anthony Scandora Jr. "I knew someone at NY Telephone who said they could give a Touch-Tone phone to everyone

who still had rotary for far less than it cost to maintain rotary dialing support, but they were enjoying what they were raking in on Touch-Tone service charges and kept it coming for as long as they could.

"Many years later I still refused to pay a surcharge for what should have been a discount. A little girl was once in my house and asked if she could call a friend. She put her finger into the 5 hole and didn't know what to do. I showed her how to dial and she thought it was great. They eventually dropped the surcharge and I dropped my rotary phones."

But at least one reader did come to Verizon's defense, albeit in a back-handed sort of way.

"At a previous job, I developed directory assistance database software. ... I can tell you with 100% certainty that there is no reason for Verizon or Mom & Pop Telephone Co. to have any more expense for handling an unlisted, or unpublished, phone number than a listed one.

"[However,] the problem isn't really Verizon. It's their job to charge consumers as much as they can for the services they provide. The issue is state regulators. The regulators really don't care if Verizon is charging folks \$5 per line for unlisted/unpublished numbers. Phone companies aren't simply going to give up that revenue (even though it has no appreciable impact on their bottom line) because it's their duty to earn as much profit for their stakeholders as possible.

"So if you really want to point a finger at someone about these fees, you ought to consider pointing it at state regulators. It's up to them to get rid of these excessive fees."

Don't hold your breath. ■

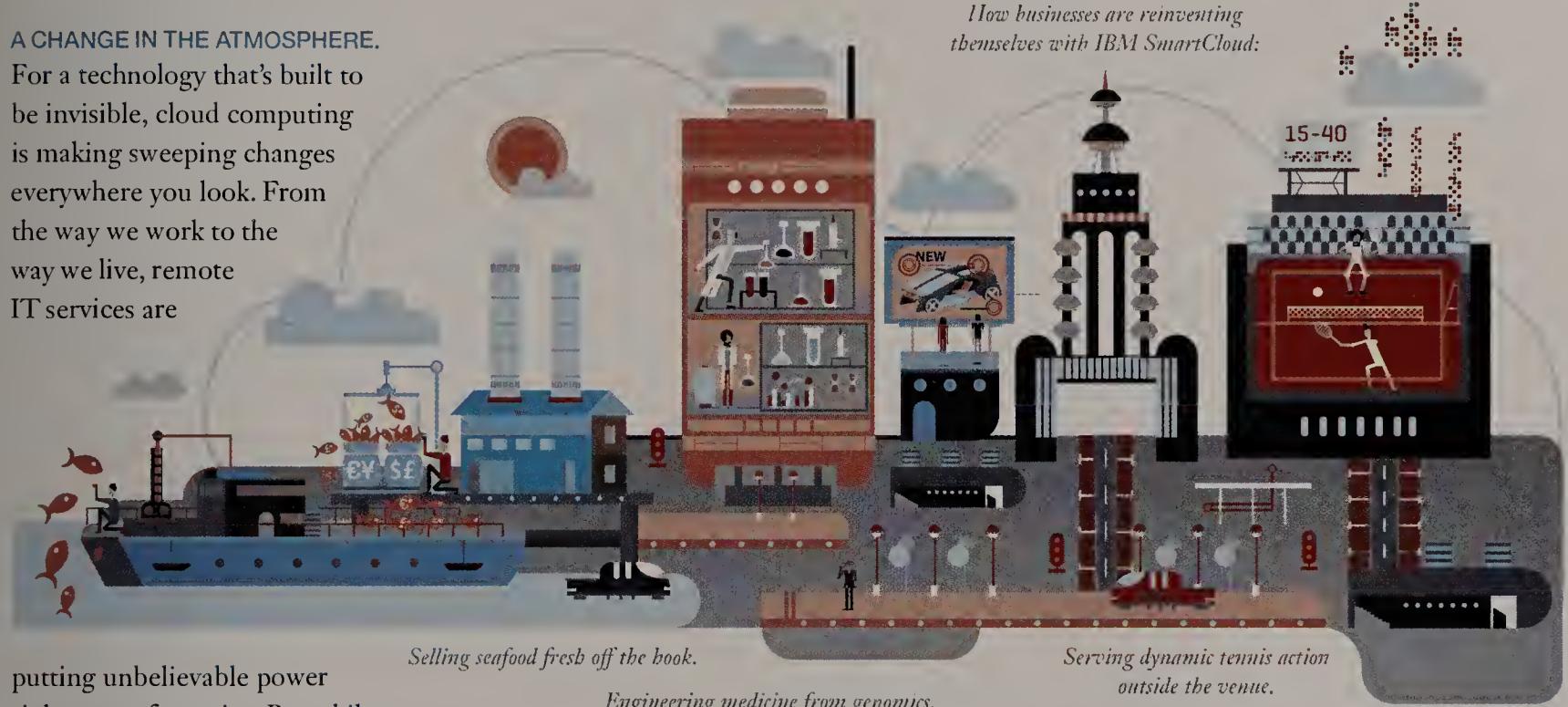
Have another view? The address is buzz@nww.com.

FROM MAINSTREAM



A CHANGE IN THE ATMOSPHERE.

For a technology that's built to be invisible, cloud computing is making sweeping changes everywhere you look. From the way we work to the way we live, remote IT services are



putting unbelievable power right at our fingertips. But while more and more companies are discovering the extraordinary efficiency gains of the cloud, few are aware of how much potential is left untapped.



In a recent study, 68% of firms using the cloud to disrupt markets expected to outperform their peers.

YESTERDAY THE BACK ROOM, TOMORROW THE BOARDROOM.
At most companies, the cloud is taken at face value—a conduit for increasing flexibility and reducing complexity. Meanwhile, forward-looking businesses are rethinking the cloud to enable them to profit from an explosion of new social, mobile and analytics capabilities. They're transforming business models, disrupting industries and getting to market in no time.

So conversations that were once held only in IT departments are now happening across the C-suite. And rapidly deployable resources like IBM SmartCloud give decision makers plenty to brainstorm about.

"Removing the burden of infrastructure really allows you to focus on improving your strategy and mission."

Marc Hoit, CIO, NC State

CLOUDS BUILT FOR RAINMAKING.

One such example is 3M. These early movers are using the cloud to analyze image design based on eye movement. Graphic artists everywhere can now upload their files and get instant feedback on what will most likely grab viewers' attention. It's a radically different proposition with untold, new market potential.



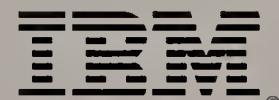
3M Visual Attention Service is a cloud-based tool for analyzing designs like this ad.

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